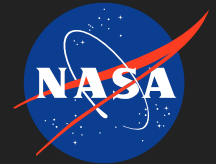


## Flexible Multifunctional Structural Health Monitoring Systems, Phase I

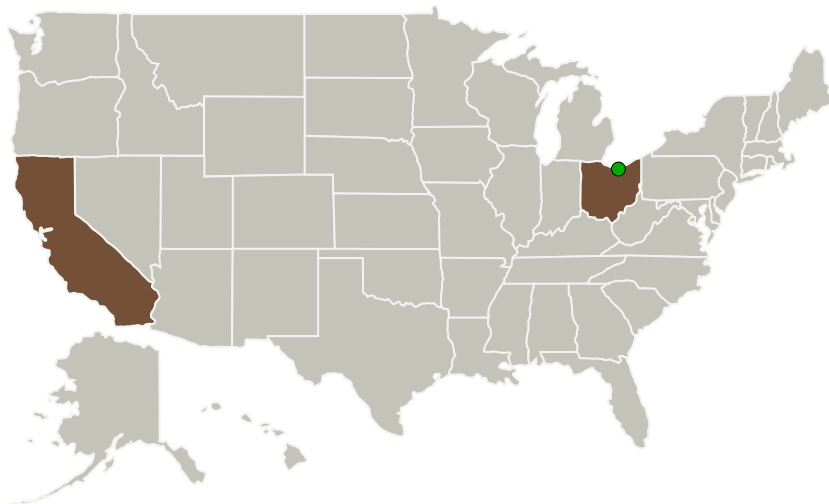
Completed Technology Project (2016 - 2016)



## Project Introduction

Composite materials are being used in an increasing number of NASA's space habitat structures because they are lightweight but very strong. The materials can enhance the operation and performance of the structures, they can also introduce significant inspection challenges that push the limits of traditional nondestructive evaluation (NDE) in terms of time and cost. Using built-in sensors for Structural Health Monitoring (SHM) can help overcome inspection difficulties, and can also enable real-time monitoring from cradle-to-grave. Currently however, there are no long duration flexible hybrid multifunctional sensors that can be conformably distributed over very large flexible surfaces and thereby enable their availability of instantaneous information on the structural integrity of expandable space habitats made of composites or other hybrid materials, and measure environmental conditions for optimum performance while adding minimal weight. This program will therefore focus on development, maturation, assembly and automation of Flexible multifunctional Structural Health Monitoring systems? on non-traditional conformal, bendable, and stretchable substrates for use in space. The program will enable the low-cost manufacturing of large area sensors that can be integrated into large flexible substrates for space habitat. Phase I will focus on demonstrating the feasibility of the approach using a space habitat material.

## Primary U.S. Work Locations and Key Partners



Flexible multifunctional Structural Health Monitoring systems, Phase I

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## Flexible Multifunctional Structural Health Monitoring Systems, Phase I

Completed Technology Project (2016 - 2016)



Organizations Performing Work	Role	Type	Location
Acellent Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Sunnyvale, California
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

## Primary U.S. Work Locations

California	Ohio
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## Project Transitions

**June 2016:** Project Start**December 2016:** Closed out

## Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/139676>)

## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Organization:**

Acellent Technologies, Inc.

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

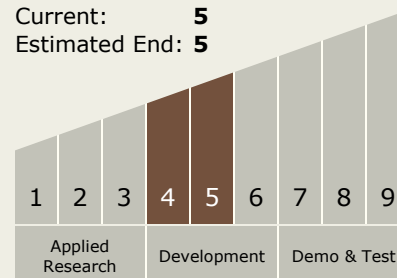
Jeffrey Bergman

## Technology Maturity (TRL)

Start: 4

Current: 5

Estimated End: 5



# Flexible Multifunctional Structural Health Monitoring Systems, Phase I

Completed Technology Project (2016 - 2016)

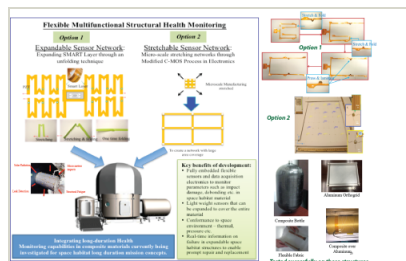


## Images



### Briefing Chart Image

Flexible multifunctional Structural Health Monitoring systems, Phase I (<https://techport.nasa.gov/image/127250>)



### Final Summary Chart Image

Flexible multifunctional Structural Health Monitoring systems, Phase I Project Image (<https://techport.nasa.gov/image/127527>)

## Technology Areas

### Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - └ TX12.2 Structures
    - └ TX12.2.3 Reliability and Sustainment

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System